

IN THE CLAIMS:

1. (currently amended) A method of tracking and predicting the capacity utilization of a goods delivery system, the goods delivery system having at least one delivery agent and at least one delivery zone comprising a geographic area comprising at least one zip group having at least one zip code, each delivery agent having at least one delivery vehicle comprising a plurality of delivery vehicle slots, each delivery vehicle slot defined as a portion of one of the delivery vehicles used to deliver a good, the goods delivery system providing a respective first potential delivery date for approval by a buyer, a respective order, and the number of delivery vehicle slots the respective order will fill, said method of tracking and predicting the capacity utilization comprising the steps of:

defining a delivery agent capacity utilization matrix for each delivery agent for a specific delivery zone, the deliver agent capacity utilization matrix comprises a number of delivery vehicle slots that the delivery agent has for use in the delivery zone, including a number of delivery vehicle slots for each zip group in the delivery zone, the total number of ~~vehicle~~ delivery vehicle slots in the zone defining a zone delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery vehicle slots and a respective number of used delivery vehicle slots for a specified period of time within the respective delivery zone, the zone maximum number of delivery vehicle slots defined by the sum of the zone delivery capacity of each delivery agent in the delivery zone;

determining whether the respective order can be shipped on the first potential ship date based on the number of available delivery vehicle slots, wherein said respective number of available delivery vehicle slots is equal to said respective zone maximum number of delivery vehicle slots minus said respective number of used delivery vehicle slots;

returning a respective date that the respective order can be delivered based on the number of available ~~vehicle~~ delivery vehicle slots on the respective date for approval by the buyer;

updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery vehicle slots;

calculating a zone workload signal for the delivery date approved by the buyer, the zone workload signal corresponding to a new capacity value for the delivery date approved by the buyer, the new capacity value equals (old capacity value + (number of filled slots)/(zone maximum));

~~calculating a workload utilization and storing the result in a workload value for each of said respective slots within the delivery zone;~~

~~setting a respective over capacity flag after determining the sum of a set of said preselected workload values are greater than a predetermined over capacity value over a historical period; and~~

~~setting a respective under capacity flag after determining that said set of preselected workload values are each less than a predetermined under capacity value over a historical period.~~

setting a capacity flag for each delivery date by comparing a sum of capacity values to a predetermined over capacity value for said delivery date, the sum of capacity values equals the sum of capacity values corresponding to a predetermined number of preceding delivery dates that immediately precede said delivery date, said setting a capacity flag comprising:

setting an over capacity flag for said delivery date if the sum of capacity values is greater than or equal to a predetermined over capacity value for said delivery date; or

setting an under capacity flag for said delivery date if the sum of capacity values is less than the predetermined over capacity value for said delivery date; and

predicting the capacity utilization of the goods delivery system by determining whether the zone workload signal for a predetermined number of days is increasing or decreasing.

2-5. (canceled)

6. (previously presented) The method of tracking capacity as recited in claim 1, wherein said predetermined over capacity value for the sum of selected designated days in said historical period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

7. (canceled)

8. (currently amended) The method of tracking capacity utilization as recited in claim [[7]] 1, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

9. (original) The method of tracking capacity utilization as recited in claim 1, further comprising the step of predicting the probability of a future respective used slot being full based on historical over capacity conditions.

10. (original) The method of tracking capacity utilization as recited in claim 9, wherein the step of predicting the probability of a future respective used slot being full further comprises the steps of:

obtaining the workload values for a predetermined period of time; and

determining the probability that the next used slot will meet an over capacity condition using a distribution function;

wherein said over capacity condition is defined as the state when the workload value is greater than or equal to 100 percent.

11. (original) The method of tracking capacity utilization as recited in claim 1, further comprising the step of predicting whether the trend line of the capacity utilization is changing.

12. (original) The method of tracking capacity utilization as recited in claim 11, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is increasing when the slope of the regression line for a first fixed period of workload values is greater than zero, within a predetermined confidence interval.

13. (original) The method of tracking capacity utilization as recited in claim 11, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is decreasing when the slope of the regression line for a first fixed period of workload values is less than zero, within a predetermined confidence interval.

14. (original) The method of tracking capacity utilization as recited in claim 12, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

15. (original) The method of tracking capacity utilization as recited in claim 13, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

16. (original) The method of tracking capacity as recited in claim 1, wherein said specified period of time is thirty days.

17. (currently amended) A computer program storage medium readable by a computer system and encoding a computer program of instructions for executing a computer process for tracking and predicting the capacity utilization of a goods delivery system, the goods delivery system having at least one delivery agent and at least one delivery zone comprising a geographic area comprising at least one zip group having at least one zip code, each delivery agent having at least one delivery vehicle comprising a plurality of delivery

vehicle slots, each delivery vehicle slot defined as a portion of one of the delivery vehicles used to deliver a good, the goods delivery system providing a respective first potential delivery date for approval by a buyer, a respective order, and the number of delivery vehicle slots the respective order will fill, said computer process comprising the steps of:

defining a delivery agent capacity utilization matrix for each delivery agent for a specific delivery zone, the delivery agent capacity utilization matrix comprises a number of delivery vehicle slots that the delivery agent has for use in the delivery zone, including a number of delivery vehicle slots for each zip group in the delivery zone, the total number of ~~vehicle~~ delivery vehicle slots in the zone defining a zone delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery vehicle slots and a respective number of used delivery vehicle slots for a specified period of time within the respective delivery zone, the zone maximum number of delivery vehicle slots defined by the sum of the zone delivery capacity of each delivery agent in the delivery zone;

determining whether the respective order can be shipped on the first potential ship date based on the number of available delivery vehicle slots, wherein said respective number of available delivery vehicle slots is equal to said respective zone maximum number of delivery vehicle slots minus said respective number of used delivery vehicle slots;

returning a respective date that the respective order can be delivered based on the number of available ~~vehicle~~ delivery vehicle slots on the respective date for approval by the buyer; and

updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery vehicle slots;

~~calculating a workload utilization and storing the result in a workload value for each of said respective vehicle delivery slots within the delivery zone;~~

~~setting a respective over capacity flag after determining that the sum of a set of preselected workload values are greater than a predetermined over capacity value over a historical period; and~~

~~setting a respective under capacity flag after determining that said set of preselected workload values are each less than a predetermined under capacity value over a historical period~~

calculating a zone workload signal for the delivery date approved by the buyer, the zone workload signal corresponding to a new capacity value for the delivery date approved by the buyer, the new capacity value equals (old capacity value + (number of filled slots)/(zone maximum));

setting a capacity flag for each delivery date by comparing a sum of capacity values to a predetermined over capacity value for said delivery date, the sum of capacity values equals the sum of capacity values corresponding to a predetermined number of preceding delivery dates that immediately precede said delivery date, said setting a capacity flag comprising:

setting an over capacity flag for said delivery date if the sum of capacity values is greater than or equal to a predetermined over capacity value for said delivery date; or

setting an under capacity flag for said delivery date if the sum of capacity values is less than a predetermined over capacity value for said delivery date; and

predicting the capacity utilization of the goods delivery system by determining whether the zone workload signal for a predetermined number of days is increasing or decreasing.

18-21. (canceled)

22. (previously presented) The computer process as recited in claim 17, wherein said predetermined over capacity value for the sum of selected designated days in said historical

period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

23. (canceled)

24. (previously presented) The computer process as recited in claim 17, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

25. (original) The computer process as recited in claim 17, further comprising the step of predicting the probability of a future respective used slot being full based on historical over capacity conditions.

26. (original) The computer process as recited in claim 25, wherein the step of predicting the probability of a future respective used slot being full further comprises the steps of:

obtaining the workload values for a predetermined period of time; and

determining the probability that the next used slot will meet an over capacity condition using a distribution function;

wherein said over capacity condition is defined as the state when the workload value is greater than or equal to 100 percent.

27. (original) The computer process as recited in claim 17, further comprising the step of predicting whether the trend line of the capacity utilization is changing.

28. (original) The computer process as recited in claim 27, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is increasing when the slope of the regression line for a first fixed period of workload values is greater than zero, within a predetermined confidence interval.

29. (original) The computer process as recited in claim 27, wherein the step of predicting future capacity utilization further comprises the step of determining that the trend line of the capacity utilization is decreasing when the slope of the regression line for a first fixed period of workload values is less than zero, within a predetermined confidence interval.

30. (original) The computer process as recited in claim 28, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

31. (original) The computer process as recited in claim 29, wherein said first fixed period is seven days and said predetermined confidence interval is about 95 percent.

32. (original) The computer process as recited in claim 17, wherein said specified period of time is thirty days.

33. (currently amended) A method of tracking and predicting the capacity utilization of a goods delivery system, the goods delivery system having at least one delivery agent and at least one delivery zone comprising a geographic area comprising at least one zip group having at least one zip code, each delivery agent having at least one delivery vehicle comprising a plurality of delivery vehicle slots, each delivery vehicle slot defined as a portion of one of the delivery vehicles used to deliver a good, the goods delivery system providing a respective first potential delivery date based on a selected potential ship date for approval by a buyer, a respective order, and the number of delivery vehicle slots the respective order will fill, said method of tracking and predicting the capacity utilization comprising the steps of:

defining a delivery agent capacity utilization matrix for each delivery agent for a specific delivery zone, the delivery agent capacity utilization matrix comprises a number of delivery vehicle slots that the delivery agent has for use in the delivery zone, including a number of delivery vehicle slots for each zip group in the delivery zone, the total number of ~~vehicle~~ delivery vehicle slots in the zone defining a zone delivery capacity of the delivery agent;

determining a respective zone maximum number of delivery vehicle slots and a respective number of used delivery vehicle slots for a specified period of time within the

respective delivery zone, the zone maximum number of ~~vehicle delivery~~ vehicle slots defined by the sum of the zone delivery capacity of each delivery agent in the delivery zone;

determining whether the respective order can be shipped on each day of a set of potential ship dates based on the number of available delivery vehicle slots, wherein said respective number of available delivery vehicle slots is equal to said respective zone maximum number of delivery vehicle slots minus said respective number of used delivery vehicle slots;

wherein said set of potential ship dates includes the respective dates from ~~the-a~~ selected potential ship date to ~~the-a~~ first determined potential ship date;

returning an indication of the respective dates that the respective order can be delivered within said set of potential ship dates based on the number of available ~~vehicle delivery~~ vehicle slots on the respective date for approval by the buyer;

updating the respective delivery agent capacity utilization matrix for the specified period after the respective order has been included within said respective number of used delivery vehicle slots;

~~calculating a workload utilization and storing the result in a workload value for each of said respective vehicle delivery slots within the delivery zone;~~

~~setting a respective over capacity flag after determining that the sum of a set of said preselected workload values are greater than a predetermined over capacity value over a historical period; and~~

~~setting a respective under capacity flag after determining that said set of preselected workload values are each less than a predetermined under capacity value over a historical period~~

calculating a zone workload signal for the delivery date approved by the buyer, the zone workload signal corresponding to a new capacity value for the delivery date approved

by the buyer, the new capacity value equals (old capacity value + (number of filled slots)/(zone maximum));

setting a capacity flag for each delivery date by comparing a sum of capacity values to a predetermined over capacity value for said delivery date, the sum of capacity values equals the sum of capacity values corresponding to a predetermined number of preceding delivery dates that immediately precede said delivery date, said setting a capacity flag comprising:

setting an over capacity flag for said delivery date if the sum of capacity values is greater than or equal to a predetermined over capacity value for said delivery date; or

setting an under capacity flag for said delivery date if the sum of capacity values is less than the predetermined over capacity value for said delivery date; and

predicting the capacity utilization of the goods delivery system by determining whether the zone workload signal for a predetermined number of days is increasing or decreasing.

34-37. (canceled)

38. (previously presented) The method of tracking capacity as recited in claim 33, wherein said predetermined over capacity value for the sum of selected designated days in said historical period is about 700 percent and wherein said historical period is the previous ten days and wherein said over capacity value is a workload greater than or equal to 100 percent.

39. (canceled)

40. (previously presented) The method of tracking capacity as recited in claim 33, wherein said preselected workload value is a workload value less than about 50 percent and wherein said historical period is the previous ten days.

41- 48. (canceled)